

## ЭТНОГРАФИЯ, ЭТНОЛОГИЯ И АНТРОПОЛОГИЯ

*S. S. Petriashin*

## RURAL DIURNAL TIMING PRACTICES BASED ON STARS OBSERVATION

The article is devoted to the study of Russian ethnoastronomy, especially knowledge of the constellations (Ursa Major, Orion's Belt, Pleiades) that were used for time-orientation during the night. The study's main sources are materials from the card catalogue of the Dictionary of Russian folk dialects and the Astronomical card catalogue of Ural Federal University that represent ethnoastronomical knowledge from the 1960s to the 1980s. In informants' speech we can distinguish one group of texts, which are termed 'orientational rules'. These texts tend to be formulaic, aphoristic, and describe the position of heavenly bodies, corresponding moments of time and action. Every rule orients one properly only during a special seasonal period, but this fact has not ever been explicitly expressed in the texts. Astronomical reconstruction of seasonal limitations of 68 texts (38 for Ursa Major, 8 for Pleiades, 22 for Orion's Belt) was made through digital planetarium software. Analysis showed that time-reckoning based on star observation was practiced not so much in winter, as in autumn (from August till December) and spring. The reconstructed functional time period of these practices corresponds with seasonal works, represented in orientational rules and astrononyms (astronomical appellations). Seasonal limitations of every constellation were also corrected with objective features of their movement in the sky that determined the most optimal and usable time for their observation. Refs 30. Figs 3.

*Keywords:* ethnoastronomy, astrononyms, time-reckoning, constellations, calendar, background knowledge.

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*С. С. Петряшин*

## СЕЛЬСКИЕ ПРАКТИКИ ОРИЕНТАЦИИ В СУТОЧНОМ ВРЕМЕНИ ПО ЗВЕЗДАМ

Статья посвящена исследованию русской этноастрономии, в частности знаний о созвездиях (Большая Медведица, Пояс Ориона, Плеяды), необходимых для ориентации в ночном времени. Основную источниковую базу составляют данные картотеки Словаря русских народных говоров и Астрономической картотеки Уральского федерального университета, репрезентирующие состояние астрономических знаний преимущественно за 60–80-е годы XX в. В прямой речи информантов можно выделить особую группу сообщений, для которых предлагается термин «ориентационные правила». Это тексты, для которых характерно тяготение к формульности, афори-

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*Petriashin Stanislav Sergeevich* — Researcher, The Russian Museum of Ethnography, 4/1, ul. Inzhenernaya, St. Petersburg, 191186, Russian Federation; [s-petryashin@yandex.ru](mailto:s-petryashin@yandex.ru)

*Петряшин Станислав Сергеевич* — научный сотрудник, Российский этнографический музей, Российская Федерация, 191186, Санкт-Петербург, ул. Инженерная, 4/1; [s-petryashin@yandex.ru](mailto:s-petryashin@yandex.ru)

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стичности, они содержат описание положения светила на небе и соответствующий ему момент времени, действие. Такое правило верно ориентирует человека во времени только в определенный календарный период, что, однако, эксплицитно в текстах не выражается. При помощи программ электронных планетариев была произведена астрономическая реконструкция календарных ограничений 68 текстов, из них 38 — для Большой Медведицы, 8 — для Плеяд, 22 — для Пояса Ориона. Анализ показал, что по созвездиям время определяли не столько зимой, сколько осенью (с августа по декабрь), в меньшей степени — весной. Реконструированное время функциональности данных практик вполне соответствует сезонным работам, отраженным в ориентационных правилах и астрономах. Календарные сроки функционирования каждого созвездия были скорректированы объективными свойствами их движения на небе, определившими самое оптимальное и удобное время их наблюдения. Библиогр. 30 назв. Ил. 3.

*Ключевые слова:* этноастрономия, астрономы, определение времени, созвездия, календарь, фоновые знания.

## Introduction

Understanding the life of people is impossible without knowing their temporal culture: ways of telling the time, daily routines, horizons of the past and the future, etc. Practices of time-reckoning by stars that are the subject matter of this paper were an important aspect of the temporal culture of the Russian village until the late 20th century. Vast literature is dedicated to the Russian festive and agricultural calendar and the temporal aspect of ritual-mythological behavioral regulations, but immediate ways of time-reckoning in everyday life have not drawn the attention of researchers as yet. The current paper focuses on the problem of reconstructing the background knowledge necessary for understanding and performing the practices of diurnal time-reckoning and, in particular, the issue of defining the calendar period during which these practices were used.

Collecting materials on the Russians' traditional knowledge about constellations has a long history. A large volume of data was collected in dialectological expeditions and published in the dialect dictionaries, from "A Regional Dictionary" (1852) to such general editions as "Dictionary of Russian Folk Dialects". Russian ethnoastronomy was studied by A. N. Afanasiev, V. B. Bogdanov, D. K. Zelenin, D. O. Svyatsky, L. A. Tultseva, V. E. Dobrovolskaya [Afanasiev 1865–1869; Bogdanov 1895; Zelenin 1910; Svyatsky 1913, 1961; Tultseva 1997, 2002; Dobrovolskaya 2010, 2011] mostly in terms of mythological views and beliefs related to celestial bodies. Works by linguists [Rut 1987, 2008, 2010; Nikonov 1973a, 1973b; Karpenko 1981; Kovalyov 2002; Azim-Zade 1980; Berezovich 2008] were characterized primarily by the onomasiological approach: they revealed motivational issues, ethnic specifics and areal distribution of astronoms (names of constellations). At the same time, a great amount of data on rural practices of diurnal time-reckoning by constellations accumulated in publications and archives but was never studied as such.

The main sources for this work are the Astronomic card-index of the Toponymic expedition of Ural Federal University (further — AC) and the card-index of the Dictionary of Russian Folk Dialects (further — CDRFD). The data set of time-reckoning (262 relevant texts) was formed arbitrarily in the sense that dialectologists' aim was to gather lexical data, while the information on the utilitarian functions of constellations was secondary. Accordingly, the information on time-reckoning by constellation was often gathered and published "by the way". On this premise, I believe that the current data set was not distorted by the formulations of the field questionnaires or research interests of the collectors and should truly reflect the essential aspects of time-reckoning by constellations as practiced by Russian rural residents.

The available materials represent the knowledge of constellations mostly between the 1960s and the 1980s. In order not to increase the chronological heterogeneity of material studied in a synchronic aspect, the sources beyond the marked time boundaries are not considered<sup>1</sup>. It must also be made clear that the majority of the records reflects the peasant culture, and not of the trades- or craftspeople, and comes from the territories of the Russian North and the Urals.

The materials are mostly the direct speech of the informants, as well as occasional observations and commentaries of the gatherers. The records of the informants' direct speech contain a special group of texts which can be defined as *rules of orientation*. These texts are characterized by formulaicity, aphoristicism and contain a description of a luminary's position in the sky and a moment of time or an action corresponding to it (e.g.: "Elk's tail to the East — morning is near" [AC]; "*Kichigi*<sup>2</sup> have risen — time to get up [CDRFD]"). An orientational rule may be an instruction (in an educational situation<sup>3</sup>) or a description. It may also be more adjusted to practice and serve to regulate the order of actions (e.g.: "In the morning the Sickie turns its handle — time to get up!").

Every orientational rule and a corresponding practice have a limited *functional time*. That is to say, every practice of orientation in time by constellations allows to tell the diurnal time fairly precisely only within a limited calendar period (about a month). This is accounted for by the difference between the stellar and solar day (about 4 minutes). As this difference increases, the sun changes its position toward stars and so passes the whole zodiac in a year. Therefore, the position of constellations toward the sun (and diurnal time) constantly changes. Thus there is permanence within the scale of the calendar year: stellar days in the tropical (solar) year are more than solar days by one, therefore the period of conspicuousness of constellations makes a year. A little gap slowly accumulates and causes the change of astronomical epochs.

It is logical to assume that the winter is more convenient for telling the time by stars, since the summer nights are short and bright. This is what some sources say: "By the stars we tell [time] in the winter" [Russian peasants 2007, p. 196]; "[We] lived by *Kichigi*. By the sun in the summer and by *Kichigi* in the winter" [AC]. However, with rare exceptions, the sources do not tell which constellation was observed at which time. There may be an impression that all constellations by which time was told (primarily, Ursa Major, Orion's Belt, the Pleiades<sup>4</sup>) were used equally throughout the winter. Accordingly, if you fill the calendar with the functional spans of a range of orientational rules, they will form a normal distribution where minimums will coincide with the autumn and spring and maximums with the winter. According to a contrary hypothesis, different constellations are used in different seasons, depending on their conspicuousness. As the sources (the orientational rules) do not indicate in which calendar periods time was told this or that way, a body of orientational rules was selected to test these hypotheses whose functional time can be reconstructed. It should be noted that Venus was also much used for time orientation

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<sup>1</sup> Some material gathered from elderly informants in the 1990s was also studied, in particular in [Kovalev 2002].

<sup>2</sup> *kichiga* in some dialects denotes a threshing flail — Ed.

<sup>3</sup> A young researcher's interaction with an elderly informant not infrequently resembles teaching of the former by the latter.

<sup>4</sup> The Pleiades are defined in astronomy as a "star cluster" but in this paper for the sake of convenience I will allow myself to include the Pleiades (together with Ursa Major and Orion's Belt) in the notion of "constellation".

but the functionality of this planet is not determined by the calendar and therefore has not been considered in this paper (transits of Venus show a clear pattern of recurrence at intervals of 8 years).

Available orientational rules cannot be understood out of the context common for the informants, which they take for granted and do not verbalize. The texts in question express the so called propositional, declarative knowledge (“knowing that”). For their complete understanding a practical, procedural or background knowledge (“knowing how”) is also required [Volkov, Kharkhordin 2008, p. 72–83]. The lack of such knowing, and particularly of the functional time of orientational rules (and corresponding practices), might be possibly supplemented by modelling the movement of the night sky by the means of planetarium software<sup>5</sup>. However, only certain texts provide plausible information. Both the description of the spatial position of a constellation and the time defined by it (both parts of an orientational rule) must have formulations that do not lend themselves to controversial interpretations, must be plain and clear enough, otherwise the required picture of the sky in an electronic planetarium and the functional time cannot be reconstructed. Unfortunately, unambiguous definition is impossible. For example, the upper culmination of a constellation or a direction of the curved “tail” of Ursa Major is impossible to fix with an astronomic precision by eye, without special instruments, as well as it is impossible to define the precise content of such a frequently used notion as “soon”, “shortly before”, etc. Due to the aforesaid difficulties, the required functional time is defined only approximately. Particular misinterpretations may be corrected by a selection of 68 texts, 38 of them for Ursa Major, 8 for the Pleiades and 22 for Orion’s Belt.

### Practice model of time orientation by stars

The rationale for the selection criteria of orientational rules (appropriate for the reconstruction of functional time) requires one to outline a model of time orientation by celestial bodies with their main structural elements. Let the definition of time by N. Elias be a benchmark for further reasoning: “the word “time” is a symbol of relationship that a human group of beings biologically endowed with the capacity for memory and synthesis, establishes between two or more continua of changes, one of which is used by it as a frame of reference or standard of measurement for the other or others.” [Elias 1992, p. 46]. Based on this definition, the practice of time orientation may be defined as an efficient establishment of a relation between the referential and the defined rhythms. Indeed, there are intermediate elements between them, the *media* necessary for mutual translation and comparison of these rhythms. In the present research, the referential rhythm refers to the rhythms of star movements in the sky, and the defined rhythm is always represented by some actions, chores, order of working operations, etc.

Two types of media should be specified: 1) spatial, i.e., media that help to define the constellation’s position in space; 2) temporal, i.e., media by which the time flow is structured and divided in separate sections.

**Spatial media** may be divided into local and absolute. Local media are ambivalently local — these are different concrete topographical landmarks specific for the current re-

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<sup>5</sup> Stellarium. URL: <http://www.stellarium.org> (accessed: 02.12.2016); Planetarium. URL: <http://neave.com/planetarium> (accessed: 02.12.2016).

gion and observed from a certain point. For example: “*Kichigi* — they have risen above the fir tree — time to get up” [CDRFD]. In this case, the spatial position (signifying time) of Orion’s Belt is defined by the comparison with the height of a fir tree. The characteristics of the fir tree as a local medium emphasizes that the fir tree does not grow everywhere and that the visual height of the tree in relation to the constellation in the sky always depends on the observer’s viewpoint, particularly the distance between the person and the tree. Another example: “*Kichigi* — three stars were like a shoulder-yoke, with them you don’t need clocks, we noticed the house they were above at midnight and two o’clock, and knew the time” [AC]. Here the local media are represented by certain neighbouring houses observed, probably, near or from the outside of one’s own house. Accordingly, the practices of time orientation that use local media are local themselves: they use the knowledge of the region and their functionality depends on the current familiar space.

On the contrary, absolute media do not depend on the place where the practice takes place: such are human body, skyline, cardinal directions, etc. For example: “Time to get up — Elk is about over the head” [AC]. The constellation’s position is described in relation to the vertical plane of the human body (standing upright). “In the winter at six in the morning *Kichiga* should be in *shelonik*” [AC] — availability of Orion’s belt in the South-West (“*shelonik*”) indicates time. Body, cardinal directions, skyline (according to which a constellation is considered to be “high” or “low”) are available everywhere, they do not depend on the viewpoint and, therefore, serve the goal of time orientation in little-known places, or while engaging in activities requiring constant movement (hunting, sea industries, hay-making, etc.).

In order to clarify the role of the temporal media in the structure of time orientation by constellations, two types of orientational rules should be distinguished. The first type includes such expressions in which a certain position of a constellation in the sky indicates some work or activity that is to take place now (or in the near future). For example, “Petrukha! Get up, time to go for the hay; cocks have already sung three times and the Elk is overhead” [CDRFD]; “Look, the Spoon are the most useful stars, time has been known by the Spoon: as soon as it turns its handle — get up, time to thresh” [AC]. In the rules of the second type, the constellation’s position indicates a certain time referring to another temporal landmark. In pre-revolutionary materials such landmark was always the rhythm of the sun: “The position of the Elk’s tail plays a crucial part: in the evening the Elk’s tail usually points to the sunset, and before sunrise this constellation turns its tail to the sunrise and thus lets you know that it is time to wake up” [Russian peasants 2008, p. 468]. However, references to cardinal points of its movement (sunset, midnight, sunrise) and accompanying phenomena (morning and evening dawn) can be found in the sources of the second half of the 20<sup>th</sup> century as well: “*Vasazhary* have rolled over, the day will break soon” [Kovalyov 2002, p. 45]; “Peter’s Cross [...] shows time, comes out at midnight, six *tonia*<sup>6</sup> have been set since then until morning” [AC]. It should be noted that although these texts do not mention actions that should be taken, they are certainly implied — time was told not for itself, for its own sake (time of daybreak was told to know when to wake up and so on). Thus, the moving sun represents a medium, a link, mediating the correlation between a constellation in the sky and the action appropriate for the moment of time.

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<sup>6</sup> ‘*Tonia*’ is a type of water area and its banks used for trapping fish — S. P.

Another temporal medium (a later one, historically) was hourly time, for example: “Before, we stuck to the *Kishigi*. As soon as there are three stars along the road, it is mid-night” (Orion’s belt) (AC); “There was a Duck’s Nest, how did it bend, we learned the time to get up at six in the morning, Duck’s Nest should be in the *shelonik*” (Pleiades) [AC].

These speculations need to be elucidated. In fact, the same practice might be spoken of in three different ways (make out three different orientational rules) or, conversely, combine different expressions in one utterance; e.g.: “The *Kichigi* are high” means “dawn is soon” / “six o’clock” / “time to get up to thresh”. The important point is that a person can (or cannot) associate the constellation’s position in the sky with the sun’s way and/or hourly time that is a rather abstract knowledge free of the context of a particular situation (e.g., threshing). Such knowledge that requires a temporal medium (solar rhythm, hourly time) allows, with the help of an already known practice, to begin regulating any other activity that takes place at the same time of the day. This effect is possible because the daily routine — length and consequence of different domesticities and chores — was tuned to and coordinated according to the solar way and/or clock.

The reconstruction of the functional time of an orientation rule (i.e. a calendar period when a corresponding practice of time orientation by stars took place) with the help of an electronic planetarium is only possible if this rule describes the spatial position through reference to absolute media (body, skyline, cardinal directions, etc.) and the required time is expressed through temporal media (solar rhythm, hourly time). A precise interpretation of other orientational rules is impossible as it requires specific local knowledge unavailable without a special field research and/or direct observation.

### Reconstruction of functional time

There are 68 orientational rules that conform to the aforesaid conditions. Doubts as to how well the current samples represent the essential characteristics of the population (262 texts) may be justified, and the result of the reconstruction will look more plausible if it finds an independent confirmation. For that purpose, I am going to use the orientational rules referring to this or that kind of seasonal work that allows an approximate apprehension of the functional time. Generally, these are the rules that do not use a temporal medium. Also, seasonal works can be reflected in astronims (names of constellations). The conducted reconstruction also find confirmation when the peak of a constellation’s use coincides with the time most convenient for its observation (visually).

The functional time of each orientational rule is roughly defined as one month. In our summary tables, every month is divided in two parts corresponding to its first and its second half (“beginning” and “end”, in other words).

1. At the end of *October* and beginning of *November* Ursa Major might be observed with its “tail” perpendicular to the skyline shortly before dawn: “The Slant Wagon turns upside down by morn and the shaft is down” [Kovalyov 2002, p. 46]; “So, the Horse-Well has bent its head — dawn is soon” [Ibid., 47]. There is another way of describing the same position of the constellation as located in the East: “The Bear if it came to the East — the light is soon” [AC].

The biggest number of texts is connected with an extremely convenient position of Ursa Major at the end of *November*-beginning of *December*. At that time “the tail” of the constellation, soon after the evening’s dawn, points to the West and before the morning’s



## Ursa Major

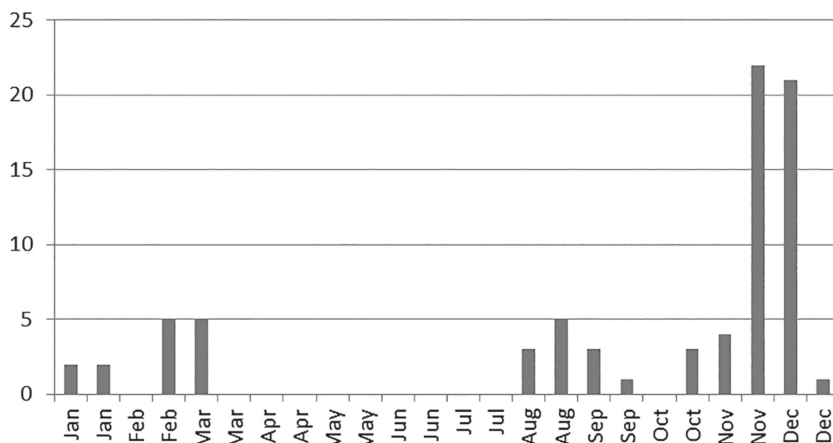


Diagram 1. Distribution of orientational rules for the calendar year for Ursa Major

dawn to the East. For example: “The Elk-cow is always with its tail to the dawn. The Elk-cow or *Volosynya* [the Pleiades]” [Dictionary 1981, p. 150]; “If the weather is clear, *Sokhatiy*’s [the Elk’s] tail is in the West. During the night the tail turns. The tail be in the East, it’s going to dawn. “*Sokhatiy*, say, has it risen?” they used to ask” [AC]; “*Sokhatiy*, if the weather is clear, has its tail in the West, and during the night the tail is turning in the East, it’s about to dawn” [AC]; “The Elk has stood to the dawn with its tail up morning is soon” [Dictionary 1981, p. 155]; “*Kichiga* has turned to the dawn — it’s about to dawn” [AC]; “Our river Selivanikha flows East from the Dvina, the old-people used to say that the Sickle follows the river by the morning, points the sun where to rise” [AC]. At the same time Ursa Major culminates above: “The seven stars were the Elk, like this, which is called the Dipper and the Elk by the old-folk — it rises by the morning” [AC]; “as soon as [the Elk] turns up — it is about to dawn” [AC]; “The Elk overhead, light is soon, it is four stars together” [AC].

The constellation’s position in December may be represented in a different way as shortly before dawn the constellation passes the point of the upper culmination and starts down: “The Wagon is going down, then dawn is soon” [Big Explanatory Dictionary 2003, p. 82].

In late *February* to early *March* Ursa Major points its “tail” to the north (down) in the evening and shortly before morning to the South (up): “Rises to the North, it is in the South in the morning. Headlong from the North to the South” [AC]; “If it turns its tail to the South, then morning is soon” [AC]; “When we lived at my mother’s, it’s morning already and the Elk is with its tail up” [AC]; “The Elk with its tail up, time to get up” [AC]. Accordingly, at that time the constellation is in the upper culmination at midnight (“in the south”): “In the sky they saw a bunch of stars in the shape of a *kichiga*: three like this and three or four aside. At midnight it’s in the south” [AC].

At the end of *August* most important was the lower culmination of Ursa Major in the North (sometimes connected with poor visibility, the horizon badly seen) before dawn: “[*Kichigi*] This constellation serves a kind of a clock for country folk; before dawn the constellation declines to the horizon, they say “the *Kichigi* are setting” [CDRFD]; “In the woods hunters told time by them, this fashion comes from Ostyaks, this Elk is a token that it turns

to the North by morning” [AC]. Indeed, in the lower culmination Ursa Major stretches along the skyline: “Morning is soon, the Elk is along the village with its tail” [AC].

At the end of *August* and beginning of *September* Ursa Major is already going out of the lower culmination before dawn: “The Elk comes out before the light” [AC]; “We used to go threshing before dawn by Dipper, seven stars will come out, time to go threshing” [AC].

The distribution of orientational rules for Ursa Major by months can be seen in diagram 1.

2. Orion and the Pleiades situated near the ecliptic<sup>7</sup>, have a period of invisibility from about *May* to *August* when they are near the sun: “*Stozhary*<sup>8</sup> [the Pleiades], the stars in the sky, rise in a bunch in the evening and disappear from *May* to *August*” [CDRFD]. A range of orientational rules is functional just at the time close to heliacal settings and risings<sup>9</sup>. Observing the constellation is fairly convenient — it is situated in the same part as the sun, so the visibility of the Pleiades signifies a near rising or recent setting of the sun. Thus, some time before a heliacal setting the Pleiades set after the evening’s dawn (*April*), and some time after a heliacal rising they rise shortly before the morning’s dawn (end of *July* — beginning of *August*): “*Valasazhary* are stars like a triangle. They rise in the morning and set in the evening” [Big Explanatory Dictionary 2003, p. 85]; “*Sazhary* have risen, it is already dawning in the summer” [Big Explanatory Dictionary 2003, p. 499]; “In the spring, in *May-April Stozhary* glow in the East” [AC] (here it is, probably, a mistake as in *April* and early *May* the Pleiades are seen only in the West).

In *September* the constellation passes the culmination and starts descending shortly before dawn: “And *Visozhary* are already high above, then it is dawn soon” [Dictionary 1969, p. 298]; “*Vasazhary* have rolled over, it going to dawn soon” [Kovalyov 2002, p. 45].

Probably, in *October* the rising of the Pleiades (“appearance”) used to be seen at 9 in the evening: “The Duck’s Nest, twelve stars, they appear at nine, in a circle” [AC].

In late *November* and early *December* the constellation rises: “*Stozhary* — stars in the sky, they rise in the evening in a bunch” [CDRFD]; “*Volosozhar* is a bunch of stars, it rises in the evening” [Kovalyov 2002, p. 42]. And in the morning before dawn it sets: “The Duck’s Nest is like a bunch. The Duck’s Nest has set — it will be light soon” [AC].

The distribution of orientational rules for the Pleiades by months can be seen in diagram 2.

3. The following text is connected with the heliacal rising (*August*) of **Orion**: “The *Chichigi* are the seven stars, as soon as they rise with dawn in the morning you’ll go to work” [CDRFD].

In late *September* — early *October* Orion culminates before dawn: “The *Kichigi* have risen high in the sky, morning is soon, there was no need of clocks those days” [AC]; “The *Kichigi* have risen high, three stars in one spot, the *Kichigi* are swinging, it is morning then” [AC]; “The *Kichigi* have risen high, they are swinging, it is morning then, time to get up and ride to the field, to the haystack” [AC].

The end of *October* — beginning of *November* is a good time for orientation by Orion as at this time the constellation is visible all night: it rises soon after the sunset and sets shortly before the sunrise. For example: “The *Kichigi* are the three stars in a row, be-

<sup>7</sup> The ecliptic is an imaginary line in the celestial sphere along which the sun moves during the year.

<sup>8</sup> A ‘*stozhar*’ is the pole set in the middle of a haystack.

<sup>9</sup> Heliacal setting is the visibility of stars in the evening’s dawn before the period of invisibility. Heliacal rising is the visibility of stars in the morning’s dawn after the period of invisibility.



## Pleiades

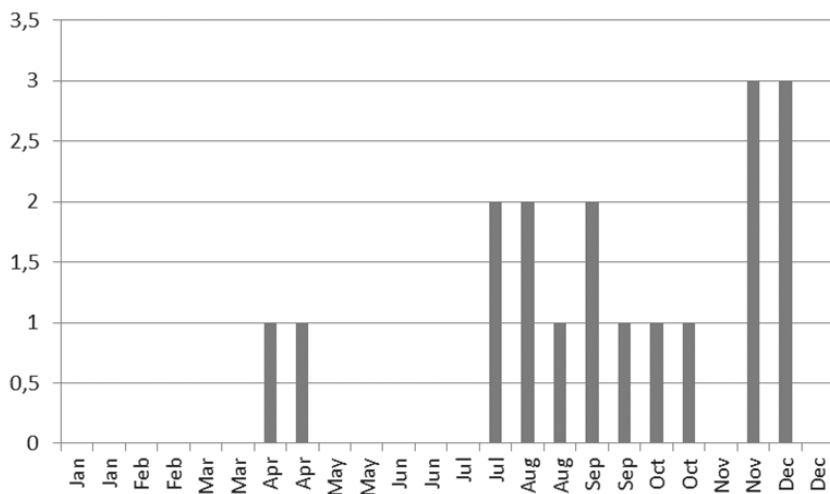


Diagram 2. Distribution of orientational rules for the calendar year for the Pleiades

fore daybreak, the *Kichigi*, three of them all night from evening till morning” [CDRFD]; “There were no clocks, so time was told by cocks and the *Kichigi*, they rose and set like a crescent” [AC]; “There was this Mikhail Chukharef, he taught us to tell the time by the *Kichigi*, they are like that, three brighter stars will cross the sky during the night” [AC]. At midnight, the constellation is situated almost perpendicular to the skyline: “As you go out on the road at midnight, the *Kichigi* stretch along the road. The *Kichigi* is the best thing, all children know it, how would you do without the good old *Kichigi*” [AC]; “Before we lived by the *Kichigi*, as soon as the three starlets rise above the road, then it is twelve o’clock” [AC]. Orion also culminates at 2–3 o’clock in October–November: “Used to get up to thresh linen by the *Kichigi*, from times immemorial, the first were just the three stars, and then two more, used to get up early: at 2–3 o’clock” [AC]. At the same time, by dawn Orion already starts to decline, from South to North: “*Orzhanye promezhki*, they are a little to the West; their three stars are in line; before morning they go to the North” [AC].

At the end of *November* — beginning of *December* the constellation culminates about midnight and closer to dawn declines to the skyline and sets: “The *Kichigi*, it is the three stars. If high — it will be a deadly night, in the morning they are lower and then it dawns” [AC]; “Low are the *Kichigi* — it will soon dawn” [CDRFD, 13, 1977, 245–246]; “[*Kichigi*] are used for telling the time at night: if the *Kichigi* are high, then it means it is still early hours; if they are on the Western side of the horizon, it is time to get up” [CDRFD]; “the *Kichigi* have already set, the dawn is soon” [CDRFD]; “[*Chichigi*]. Should they come at three o’clock, we go to the cows, they set only by morning” [CDRFD]; “The *Kichigi* will stand low in the morning, time to go threshing” [AC]; “Three bright stars come from the East to West and will set by dawn, they are called the *Kichigi*” [AC]; “The *Kichigi* are three stars in a row, together a line, kind of a stick, sets by morning” [AC].

In *March* the constellation sets behind the horizon at midnight: “As soon as the *Kichigi* set, then it is twelve o’clock” [AC].

## Orion's Belt

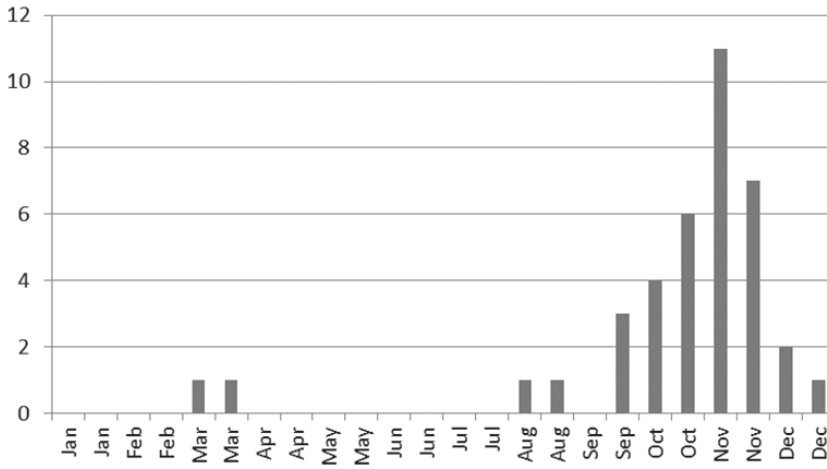


Diagram 3. Distribution of orientational rules for calendar year for Orion's belt

The distribution of orientational rules for the Orion's belt by months can be seen in diagram 3.

As it is seen from the previous text and diagrams 1–3, there are both common and specific features in the functional time of all the three stellar objects. Telling the time by the stars was practiced most in late autumn to early winter (especially November-December). It was also actively used in late summer and early autumn (August-September). Orientation by the stars from the end of winter to the beginning of spring (February-April) was more rare. Indeed, the peaks in using each constellation differ, which reflects the convenience of observing their movement in the sky at a certain calendar period. Above all, cardinal points of the constellations' motion paths were traced: the moment of rising and setting, passing the upper and lower culminations; also its position in relation to the skyline (parallel and perpendicular), cardinal directions, etc., were observed.

The reconstruction of the functional time now needs to be tested by the material of orientational rules which contain information about seasonal works. First of all, it should be noted that the primary function of orientation by the stars was telling the time of going to bed and getting up, for example: "The *Kichigi* have risen, time to get up" (Ursa Major, further U.M.) [CDRFD]; "The Elk has set its tail against the dawn, time to get up" (U.M.) [AC]; "Time to get up — the Elk has turned with its tail to the top of the head" (U.M.) [AC]; "The *Kichigi* is a constellation of Orion by which time of going to bed and time of getting up is told" [CDRFD]; "[*Kichigi*] are used to tell the time at night: if the *Kichigi* are high, then it is still early on the clock; if they are on the Western side of the horizon, it is already time to get up" (Orion) [CDRFD]. The utility of telling the time to sleep is evident but what was the aim of getting up by the stars? It could be necessary for various morning chores: "The Khokhol [Ukrainian] wagon has toppled over, time to light the stove" (U.M.) [CDRFD]; "Women tell the time for lighting stoves by the position of the constellation in the early hours of a winter morning" (Orion) [CDRFD]; "Look, where the *Kichigi* are, time

to go for the water” [AC]; “They come at three o’clock, we go to the cows, they set only by morning” (Orion) [CDRFD].

Of the seasonal works only two are mentioned. Most evidence is of threshing that could begin after the harvest but more often took place in the autumn months. If bad weather hindered the field works or a big harvest was gathered, threshing could take place in the winter as well. M. E. Rut noted that “orientation in time is aimed at completing agricultural works: the movement of Ursa Major and Orion in the sky in the autumn define the beginning of the threshing in the early morning” [Rut 2008, p. 58]. There are many examples: “Look, the Spoon are the most useful stars, time was told by the Spoon: according to how it turns the handle — get up, time to thresh!” [AC]; “The *Kichigi* have risen low in the morning, we have to go threshing” (Orion) [AC]; “Look, the *Kichiga* is already straight, it is time to get up. It looks like the *kichiga* which we threshed with” (Orion) [AC]; “As soon as the *Kichiga* appears, it is time to go threshing” (U. M.) [AC]; “let’s go threshing, the *Kichiga* has already risen high” (the constellation is not defined) [AC]; “there are three stars together in the sky and three more together, oh, the *Kichiga* is already high, time to go threshing” (Orion) [AC].

The other seasonal work is taking hay from the fields. Haymaking traditionally took place in July but could delay because of the rains. Accordingly, the terms of taking hay from the fields shifted as well. If the far fields were mowed, the work could continue in the winter. For example: “The *Kichigi* are going to set here, time to harness and go for the hay. Look, where the *Kichigi* are, three stars in a row” (Orion) [AC]; “The *Kichigi* have risen high, they are swinging, then it is morning, time to get up and go in the field to make hay” (Orion) [AC].

Russian peasant names of constellations are mostly centred around the following themes: human beings (the Women, Seven Sisters, Old Man’s Cane, etc.), animals (Elk, She-wolf, Duck’s Nest, etc.), various household utensils (Salt-cellar, Sieve, Dipper, etc.), religion (Peter’s Cross, Moses’ fingerlets, etc.) [Rut 2008, p. 58–61], and finally, agricultural tools. Such astronyms as the Mowers, the Hay Poles, the Rake, the Rakelets [Rut 2010, p. 68–69, 75, 101] reveal a connection to the summer haymaking season. The Sickles, the Reaping hook, the Threshing star, the *Kichiga* (and its derivatives), the *Orzhanye promezhki* all indicate to the harvesting and threshing of the grain [Rut 2010, p. 62–63, 71–73, 78, 155]. The *kichiga* is a tool for threshing in the form of a curved stick; *promezhek* is a part of a stack between two *stozhary* (hay poles). Such names as Plowshare, *Saban-noga*, *Chipega* (a plow handle), Yoke refer to the tools for soil cultivation [Rut 2010, p. 59, 64, 66–67]. Spring plowing usually took place in April-May, autumn plowing and underwinter plowing took place in August-September.

## Conclusion

The study has shown that time was told by constellations not so much in the winter as in the autumn (from August to December, to be precise) and less so in the spring. The reconstructed functional time of the current practices corresponds to seasonal work reflected in the orientational rules and astronyms and is characterized by the convenience of observing the constellations. However, we may see not only a correlation, but some cause-and-effect link here. Seasonal field work requires a certain “temporal discipline” due to shortage of time, in particular, so that people could get up at night or early in the

morning before dawn. Apparently, it is this practical necessity that determined the vast use of constellations for orientation in time. Calendar terms for the functioning of every constellation were corrected by the features of their movement in the sky that defined the best and most convenient time for observing them.

In conclusion, I would like to touch upon the issue of why the calendar periods, during which the practices can function and be used, are not mentioned in the orientational rules as well as the commentaries on them (both by the informants and the gatherers). The answer seems to lie in the fact that this knowledge is contextual. Different practices of orientation in time were brought into use according to what was the tradition, the custom in a particular situation (at a particular time), and thus they were not used in other periods when they would have been dysfunctional and, as a result, would have been reflected on (from what is “ready-to-hand” they would have become “present-at-hand”, in Heidegger’s terms). In other words, functional time is a background, practical knowledge. The calendar projection of various practices and their comparison, whose results are presented in this paper, allowed me to problematize their functional time and produce a propositional, declarative knowledge. But, in his routine a country dweller does not need these or similar operations, and is not interested in them. The following words of P. Bourdieu may be related to the studied practices of time orientation — they are “are deployed successively by different agents in different situations, and which can never be practically mobilized together because the necessities of practice never require such a synoptic apprehension but rather discourage it through their urgent demands”. Different ways of orientation by the stars “never being brought face to face in practice, are practically compatible even if they are logically contradictory” [Bourdieu 1992, p. 83].

## References

- Afanas'ev A. N. *Poeticheskie vozzreniia slavian na prirodu*: in 3 vols. Moscow, Grachev and Co. Print., 1865–1869, vol. 1 — 796 p.; vol. 2 — 784 p.; vol. 3 — 796 p. (In Russian)
- Astronimicheskaia kartoteka Toponimicheskoi ekspeditsii Ural'skogo Federal'nogo Universiteta. (In Russian)
- Azim-zade E. G. K sopostavitel'nomu analizu slavianskikh i tiurkskikh nazvanii sozvezdii. *Sovetskoe slavianovedenie*, 1980, no. 1, pp. 96–103. (In Russian)
- Berezovich E. L. Ksenomotivatsiia v vostochnoslavianskikh oboznacheniiakh nebesnykh svetil i pogodnykh iavlenii. *Materialy i issledovaniia po russkoi dialektologii*. Moscow, Nauka Publ., 2008, book 3 (9), pp. 328–347. (In Russian)
- Bogdanov V. [B.] Narodnaia kosmografiia. Kak ustroeny zemlia i nebo, po predstavleniiam nekotorykh krest'ian Smolenskoii gubernii. *Zemlevedenie*, 1895, no. 1, pp. 127–136. (In Russian)
- Boi'shoi tolkovyi slovar' donskogo kazachestva. Moscow, Russkie slovari Publ., Astrel Publ., AST Publ., 2003, 608 p. (In Russian)
- Bourdieu P. *The Logic of Practice*. Stanford, Stanford University Press, 1992, 333 p.
- Dobrovol'skaia V. E. Nazvaniia Mlechnogo Puti v traditsionnoi kul'ture Vladimirskoi oblasti (astronomiy i sviazannye s nimi mifologicheskie predstavleniia). *Ot Kongressa k Kongressu. Materialy Vtorogo Vserossiiskogo kongressa fol'kloristov. Sbornik dokladov*. Moscow, State Republican Centre of Russian Folklore Press, 2010, vol. 1, pp. 145–157. (In Russian)
- Dobrovol'skaia V. E. Zaprety i predpisanii, sviazannye s narodnoi astronomiei v traditsionnoi kul'ture tsentral'noi Rossii. *Fol'klor i suchasnaia kul'tura: materialy III Mizhnarodnai navukova-praktychnai konferentsii*. Minsk, BDU Press, 2011, iss. 1, pp. 22–25. (In Russian)
- Elias N. *Time: An Essay*. Oxford, Blackwell, 1992, 216 p.
- Karpenko Iu. A. *Nazvaniia zvezdnogo neba*. Moscow, Nauka Publ., 1981, 184 p. (In Russian)
- Kartoteka Slovaria russkikh narodnykh govorov Instituta lingvisticheskikh issledovaniy RAN (St. Petersburg). (In Russian)

- Kovalev G.F. Narodnaia astronomiia v govorakh russkogo i ukrainskogo pogranich'ia (Voronezhskaia oblast'). *Vestnik of Voronezh State University. Humanities*. 2002, no. 2, pp. 39–53. (In Russian)
- Nikonov V.A. Geografiia kosmonimov i etnicheskie sviazi. *Problemy etnogeografii Vostoka*. Moscow, RGO Publ., 1973, pp. 33–37. (In Russian)
- Nikonov V.A. Kosmonimiia Povolzh'ia. *Onomastika Povolzh'ia. Materialy 3 konferentsii po onomastike Povolzh'ia*. Ufa, [s. n.], 1973, pp. 373–381. (In Russian)
- Russkie krest'iane. Zhizn'. Byt. Nrvy. Materialy "Etnograficheskogo biuro" kniazia V.N. Tenisheva. Vol. 3: Kaluzhskaia guberniia. St. Petersburg, Business Polygraphy, 2005, 647 p. (In Russian)
- Russkie krest'iane. Zhizn'. Byt. Nrvy. Materialy "Etnograficheskogo biuro" kniazia V.N. Tenisheva. Vol. 5: Vologodskaia guberniia, part 3. Nikol'skii i Sol'vychegodskii uezdy. St. Petersburg, Business Polygraphy, 2007, 683 p. (In Russian)
- Russkie krest'iane. Zhizn'. Byt. Nrvy. Materialy "Etnograficheskogo biuro" kniazia V.N. Tenisheva. Vol. 5: Vologodskaia guberniia, part 4. Totemskii, Ust'sysol'skii, Ustiugskii i Iarenskii uezdy. St. Petersburg, Business Polygraphy, 2008, 807 p. (In Russian)
- Rut M. E. *Obraznaia nominatsiia v russkoi onomastike*. Moscow, LKI Publ., 2008, 192 p. (In Russian)
- Rut M. E. *Slovar' astronomov. Zvezdnoe nebo po-russki*. Moscow, AST-PRESS BOOK Publ., 2010, 288 p. (In Russian)
- Rut M. E. *Russkaia narodnaia astronomiia*. Sverdlovsk, UrGU Press, 1987, 67 p. (In Russian)
- Slovar' russkikh narodnykh govorov. Leningrad, Nauka Publ., 1969, vol. 4. 355 p. (In Russian)
- Slovar' russkikh narodnykh govorov. Leningrad, Nauka Publ., 1977, vol. 13. 358 p. (In Russian)
- Slovar' russkikh narodnykh govorov. Leningrad, Nauka Publ., 1981, vol. 17. 383 p. (In Russian)
- Sviatskii D. O. Ocherki istorii astronomii v Drevnei Rusi, iss. 1. *Istoriko-astronomicheskie issledovaniia*. Vol. VII. Moscow, State Publishing house of physical and mathematical literature, 1961, pp. 71–129. (In Russian)
- Sviatskoi D. O. *Pod svodom khrystal'nogo neba: ocherki po astral'noi mifologii v oblasti religioznogo i narodnogo mirovozzreniia*. St. Petersburg, M. Stasiulevich Print., 1913, 131 p. (In Russian)
- Tul'tseva L. A. Antropokosmicheskie vozzreniia russkikh krest'ian: den' Spiridona-povorota. *Etnograficheskoe obozrenie*, 1997, no. 5, pp. 89–101. (In Russian)
- Tul'tseva L. A. Narodnye nazvaniia Mlechnogo Puti v srednerusskoi polose Rossii. *Astronomiia drevnikh obshchestv*. Moscow, Nauka Publ., 2002, pp. 280–284. (In Russian)
- Volkov V.V., Kharkhordin O.V. *Teoriia praktik*. St. Petersburg, European University in Saint-Petersburg Press, 2008, 298 p. (In Russian)
- Zelenin D.K. Narodnye sueveriiia o kometakh. *Istoricheskii vestnik*, 1910, vol. 120, no. 4, pp. 161–168. (In Russian)

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